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10/599,802	10/10/2006	Biswaroop Mukherjee	7000-365-1A	4842

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EXAMINER	
SIVJI, NIZAR N	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/599,802	MUKHERJEE ET AL.	
	Examiner	Art Unit	
	NIZAR SIVJI	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 January 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 October 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 5 and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant is claiming "scheduling embodied in the at least one communication schedule….within the at least one communication schedule is provided in serial fashion" set forth confusing terminology involving the expressions scheduling (line 1) and within the communication schedule (L 2, 3) in serial fashion. Examiner is not sure what applicant meant by serial fashion.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

2. Claims 1, 6-8, 11-13, 16, 17, 18, 23, 24, 25, 28, 29, 30, 33, 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itai et al. European Patent No. EP 1059773 A2 in view of Belshner et al. Pub. No. 20050232224

Regarding Claim 1, Itai discloses exchanging scheduling information with at least one compatible communication node in a wireless communication network (Para 18, wireless mesh topology network having mutually interconnected nodes with line of sight communication with at least one neighbor. Every node has scheduled slots with which to exchange control information with each of its neighbors); determining a communication schedule for communications with the at least one compatible communication node based on the scheduling information (Para 18 and 23, the node receives the request to transmit grants or denies transmissions. Part of the grant includes a schedule, selected from the requester's schedule, for when to transmit the data); and communicating with the at least one compatible communication node based on the communication schedule (Para 20, each node must communicate with each of its neighbor with information about free time in the node's schedule). Itai differs from claimed invention in not specifically teaching independently determine communication schedules. However, Belshner discloses that the processing of a communication time schedule of a network node is based on its local clock cycle. The length of a local communication cycle therefore depends on the local clock cycle and the time schedule to the communication time schedules of at least one other network node prior to being integrated as active network node (Para 25 and Abstract). Therefore, it is obvious to one having ordinary skill in the art at the time when the invention is made that facilitating

independently determination of communication schedules as per teaching of Belshner so as to increase in the efficient use of the spectrum at a given spatially covered region.

Regarding Claim 18, Itai discloses at least one wireless communication interface (Para 18, wireless mesh topology network); exchange scheduling information with at least one compatible communication node in a wireless communication network (Para 18, wireless mesh topology network having mutually interconnected nodes with line of sight communication with at least one neighbor. Every node has scheduled slots with which to exchange control information with each of its neighbors); determine a communication schedule for communications with the at least one compatible communication node based on the scheduling information (Para 18 and 23, the node receives the request to transmit grants or denies transmissions. Part of the grant includes a schedule, selected from the requester's schedule, for when to transmit the data); and communicate with the at least one compatible communication node based on the communication schedule (Para 20, each node must communicate with each of its neighbor with information about free time in the node's schedule). Itai differs from claimed invention in not specifically teaching a control system associated with the at least one wireless communication interface and wherein communication nodes in the wireless communication network independently determine communication schedules with other compatible communication nodes. However, Belshner discloses that before release by a superior control unit (not shown in detail), the control unit performs all required settings for participation in the communication on the network node (Para 29). Belshner further discloses that the processing of a communication time schedule of a network node is

based on its local clock cycle. The length of a local communication cycle therefore depends on the local clock cycle and the time schedule to the communication time schedules of at least one other network node prior to being integrated as active network node (Para 25 and Abstract). Therefore, it is obvious to one having ordinary skill in the art at the time the invention is made that a control system associated with the at least one wireless communication interface and wherein communication nodes in the wireless communication network independently determine communication schedules with other compatible communication nodes as per teaching of Fuhrmann so as to increase in the efficient use of the spectrum at a given spatially covered region.

Regarding Claim 6 and 23, Belschner disclose further wherein the communication schedule provides a schedule for forwarding traffic to or from the at least one compatible communication node (Para 8 and 19).

Regarding Claim 7 and 24, Belschner disclose further wherein the communication schedule provides a schedule for exchanging scheduling information with the at least one compatible communication node (Para 22).

Regarding Claim 8 and 25, Belschner disclose further wherein the communication schedule provides a schedule for forwarding traffic to or from the at least one compatible communication node and for exchanging scheduling information with the at least one compatible communication node (Para 8, 19 and 22).

Regarding Claim 11 and 28, Itai discloses further wherein the communication schedule defines transmission opportunities during which communications with the at least one compatible communication node are scheduled to take place (Para 18).

Regarding Claim 12 and 29, Belschner disclose wherein the transmission opportunities are variable in length (Para 72).

Regarding Claim 13 and 30, Belschner disclose wherein the lengths of the transmission opportunities are based on communication or scheduling related parameters (Para 72).

Regarding Claim 16 and 33, Belshner discloses further wherein the scheduling information comprises communication parameter information, and the communication schedule is determined, in part, based on the communication parameter information (Para 83).

Regarding Claim 17 and 34, The method of claim 1 wherein the scheduling information comprises at least one of collision information pertaining to past transmission opportunities and susceptibility information pertaining to future available transmission opportunities that may likely be subjected to interference (Para 13).

3. Claims 2-4, 14, 15, 19-21, 31, 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itai et al. European Patent No. EP 1059773 A2 in view of Belshner et al. Pub. No. 20050232224 and further in view of Garcia-Luna Aceves et al. Patent No. 6788702 (Refer to as Garcia)

Regarding Claim 2 and 19, Itai and Belshner differs from claimed invention in not specifically teaching wherein communications with each of the at least one compatible communication node are established over at least one corresponding communication link, which does not contend with other communication links in the wireless communication network during scheduled communications. However, Garcia discloses

that avoid collisions by assuming nodes are synchronized with their neighbors, have knowledge of their neighbors' schedules and are able to receive from multiple transmitting neighbors simultaneously (Col 5 L 44-49). Therefore, it is obvious to one having ordinary skill in the art at the time the invention was made that communications with each of the at least one compatible communication node are established over at least one corresponding communication link, which does not contend with other communication links in the wireless communication network during scheduled communications as per teaching of Garcia so as to increase the efficiency.

Regarding Claim 3 and 20, Itai and Belshner differs from claimed invention in not specifically teaching wherein communications with the at least one compatible communication node are established over a plurality of communication links, which do not contend with each other or with other communication links in the wireless communication network during scheduled communications. However, Garcia discloses that avoid collisions by assuming nodes are synchronized with their neighbors, have knowledge of their neighbors' schedules and are able to receive from multiple transmitting neighbors simultaneously (Col 5 L 44-49). Therefore, it is obvious to one having ordinary skill in the art at the time the invention was made that communications with the at least one compatible communication node are established over a plurality of communication links, which do not contend with each other or with other communication links in the wireless communication network during scheduled communications as per teaching of Garcia so as to increase the efficiency.

Regarding Claim 4 and 21, Itai and Belshner differs from claimed invention in not

specifically teaching wherein the at least one compatible communication node is a plurality of compatible communication nodes and at least one communication schedule is established for controlling communications with each of the plurality of compatible communication nodes. However, Garcia discloses that avoid collisions by assuming nodes are synchronized with their neighbors, have knowledge of their neighbors' schedules and are able to receive from multiple transmitting neighbors simultaneously (Col 5 L 44-49). Therefore, it is obvious to one having ordinary skill in the art at the time the invention was made that communication node is a plurality of compatible communication nodes and at least one communication schedule is established for controlling communications with each of the plurality of compatible communication nodes as per teaching of Garcia so as to increase the efficiency.

Regarding Claim 14 and 31, Itai and Belshner discloses transmission opportunity but differs from claimed invention in not specifically teaching wherein certain packets are scheduled to hop through a plurality of compatible communication nodes. However, Garcia discloses channel access used in multihop wireless network consists of establishing transmission schedules allocating stations to different times and data channels (Col 4 L 58-67). Therefore, it is obvious to one having ordinary skill in the art at the time the invention was made wherein certain packets are scheduled to hop through a plurality of compatible communication nodes as per teaching of Garcia so as to increase the efficiency.

Regarding Claim 15 and 32, Itai and Belshner schedule to occur during a given transmission but differs from claimed invention in not specifically teaching wherein

communications with a plurality of compatible communication nodes. However, Garcia discloses channel access used in multihop wireless network consists of establishing transmission schedules allocating stations to different times and data channels (Col 4 L 58-67). Therefore, it is obvious to one having ordinary skill in the art at the time the invention was made that communications with a plurality of compatible communication nodes as per teaching of Garcia so as to increase the efficiency.

4. Claims 5 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itai et al. European Patent No. EP 1059773 A2 in view of Belshner et al. Pub. No. 20050232224 and further in view of Garcia-Luna Aceves et al. Patent No. 6788702 (Refer to as Garcia) and further in view of Elizondo Patent No. 6542476

Regarding Claim 5 and 22, Itai and Bleshner discloses communication schedule but Itai, Belshner and Garcia differs from claimed invention in not specifically teaching wherein each of the plurality of compatible communication nodes within the at least one communication schedule is provided in serial fashion. However, Elizondo discloses that the communications network 10 may comprise a Wireless Intelligent Network, and the nodes 20, 30, and 40 may comprise MSCs. Typically, the nodes 20, 30, and 40, are engaged in a Transaction Capability Application Part (TCAP) communication transaction wherein messages are sent between the nodes in a serial fashion so as to elicit dynamic response timer regeneration (Col 4 L 14 – 20). Therefore, it is obvious to one having ordinary skill in the art at the time the invention was made that each of the plurality of compatible communication nodes within the at least one communication

schedule is provided in serial fashion as per teaching of Elizondo so as to avoid conflicting schedules.

5. Claims 9 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itai et al. European Patent No. EP 1059773 A2 in view of Belshner et al. Pub. No. 20050232224 and further in view of Fuhrmann et al. Pub. No. 20030067873

Regarding Claim 9 and 26, Itai and Belshner differs from claimed invention in not specifically teaching wherein the communication nodes in the wireless communication network maintain independent clocks, which are not synchronized with one another. However, Fuhrmann discloses global clock and the local clock which are not synchronized (Para 14 and 15). Therefore, it is obvious to one having ordinary skill in the art at the time the invention was made that the communication nodes in the wireless communication network maintain independent clocks, which are not synchronized with one another as per teaching of Fuhrmann so as to synchronize data based on local clocks rather than global clock.

6. Claims 10 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itai et al. European Patent No. EP 1059773 A2 in view of Belshner et al. Pub. No. 20050232224 and further in view of Besset-Bathias et al. Pub. No. 20040176098

Regarding Claim 10 and 27, Itai and Belshner discloses wherein determining the communication schedule provides scheduling sufficient to ensure communications with the at least one compatible communication node occur but differs from claimed invention in not specifically teaching further comprising providing a plurality of queues for traffic to send to the at least one compatible communication node and corresponding

to a plurality of quality of service levels. However, Besset teaches that the implicit policing is a function that is needed in order to be able to comply with the undertaking made with a user concerning quality of service. If the network becomes heavily loaded, this policing function verifies that the behavior of the user is indeed in compliance with the user's traffic contract in order to ensure that a user whose behavior is illicit (whether deliberately or otherwise) cannot degrade the quality of service supplied to other users (Para 65). Therefore, it is obvious to one having ordinary skill in the art at the time the invention was made that comprising providing a plurality of queues for traffic to send to the at least one compatible communication node and corresponding to a plurality of quality of service levels as per teaching of Besset so as to provide service to the customer based on quality of service level assigned.

Response to Arguments

Applicant's arguments filed 1/19/2010 have been fully considered but they are not persuasive.

Regarding claim 5 and 22, Applicant is arguing that the 35 U.S.C. 112 second paragraph is not valid where the Applicant is used the term “serial fashion”. Further, Applicant is referring to the general meaning of “serial fashion” as not in parallel or at the same time. However, from the Specification (See Para 8, 41) it does not define the term “serial fashion”. Further, where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant intended to so

redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999). The term is indefinite because the specification does not clearly redefine the term.

Applicant is arguing that the reference does not teach or disclose "exchanging scheduling information with at least one compatible communication node" and "determining a communication schedule for communication with the at least one compatible communication node based on the scheduling information." However, Itai disclose (Para 18) wireless mesh topology network where node has line of sight communication with at least one neighbor (can be referred to as compatible communication node) and communication between nodes is by packet. Every node has scheduled slots with which to exchange control information with each of its neighbor refer to as scheduling information with at least one compatible communication node. Further, (Para 18 and 23) disclose that the node receives the request to transmit grants or denies transmission refer to as determining the communication schedule based on the control information where every node has scheduled slot with which to exchange control information with its neighbors. Also every node knows, in addition to its own control channel schedule, its neighbor control channel schedule. Further, part of the grant includes a schedule, selected from the requester's schedule, for when to transmit the data. Therefore, Applicant argument regarding Claim 1 and 18 are non-persuasive and for at least the above reason rejection is maintained.

Applicant is arguing that the reference does not teach or disclose "the communication node independently determine communication schedules". Belschner

disclose a network comprising an interconnecting network and several network nodes. Belschner disclose that (Para 24-27 and Abstract) that in the TDMA system each network node has a common time information which is matched among all participants and which can be distributed through a central network node to all other network nodes. A time controlled protocol defines a local time information for each individual network node which is synchronized with other system participants to provide global correspondence refer to as independent. After receipt of a synchronization message, the respective corresponding time of receipt is compared with the expected time derived from the local clock time and based on that determine communication schedules. Further, Itai also disclose independent determination of schedules (Para 19 and 20) and RTS message is sent to the neighbor with information about free time in the node's schedule, a CTS message is sent from the neighbor granting transmission at some agreeable time, an RTS message from the neighbor with information about the neighbor unscheduled time, and a CTS message to the neighbor granting transmission at some mutually agreeable time. Therefore, Applicant argument regarding Claim 1 and 18 is non-persuasive and for at least the above reason rejection is maintained.

Regarding claims 2-17 and 19-34, Applicant argues that because these claims depend upon claim 1 and claim 18, respectively, which Applicant believes is not taught by the reference. Examiner has already addressed that the reference does, in fact, teach the elements of claim 1 and 18 above. For at least these reasons, Applicant's arguments regarding claims 2-17 and 19-34 are not persuasive and, therefore, the rejection is maintained.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NIZAR SIVJI whose telephone number is (571)270-7462. The examiner can normally be reached on 7:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, George Eng can be reached on (571) 272-7495. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/George Eng/
Supervisory Patent Examiner, Art Unit 2617

/NIZAR SIVJI/
Examiner, Art Unit 2617